Prediction of Ownership and Control Concentration in German and UK Initial Public Offerings

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Abstract:

The paper investigates why the corporate landscapes of Germany and UK are so different in terms of control by analyzing ownership and control evolution in recent IPOs. We report the control evolution of a sample of size- and industry-matched German and UK companies six years subsequent to the flotation. The initial shareholders in the average German IPO lose majority control six years after going public, whereas the initial owners of UK IPOs decrease their holding to less than the majority two years after going public. Acquisitions are frequent in the UK with 35% of IPOs being taken over versus only one German sample company. Partial take-overs are common in German firms: in one third of the sample a large controlling shareholder acquires control from the existing controlling shareholder.

In order to predict the state of ownership and control six years after going public, a multinomial logit model is used. We distinguish four possible states of control: the company is (i) still controlled by the shareholders who controlled the company prior to the flotation, (ii) acquired by a closely held shareholder (i.e. an individual or family), (iii) acquired by a shareholder with diffuse ownership and (iv) widely held. We find that if the founder still owns a stake at the flotation, the probability that the company will be controlled by this founder after six years is large. For risky and poorly performing German and UK companies, the odds of ending up with concentrated ultimate control increase. In the case of German IPOs, the chance of substantial control concentration augments when non-voting shares have been issued at flotation and when the company experiences a high growth rate subsequent to the IPO. Profitable, low-risk, and large companies tend to be widely held six years after being listed.

1. **Introduction.**

At first sight, the corporate governance systems, including capital market liquidity, of the UK and Germany could not be more different. The German blockholder system is characterized by a small number of quoted firms and poor liquidity. Most firms have complex concentrated shareholding structures. Weak managers are believed to be disciplined by large shareholders rather than by the market for corporate control and there are potential agency conflicts between controlling and minority shareholders. In contrast, the Anglo-American market-oriented or outsider system has a large number of listed companies with mostly dispersed ownership. The high dispersion increases the potential lack of monitoring and poor corporate performance is disciplined by hostile take-overs. Not only are the capital markets different under both governance mechanisms, but there is also a large discrepancy between the legal systems in both countries: a codified system versus a case-based system. In the light of high product market competition, the joint existence of two distinct corporate-control mechanisms – the market-oriented and the blockholder systems - is puzzling. No economic theory – be it principal-agent theory, incomplete contracting or transaction cost theory – can justify the co-existence of different ownership and control systems.

Some, such as Laporta et al. (1997, 1998 and 1999), expect the market-oriented system to emerge eventually as the superior corporate governance model through an evolutionary process. Consequently, they expect that the blockholder system will gradually develop more liquid capital markets, copy Anglo-American style financial regulation, stimulate better shareholder-rights enforceability in courts and dismantle complex shareholding cascades. In the Anglo-American system, there seems to be no need to build up large equity stakes yielding control and facilitating monitoring because the common law system is providing superior protection of shareholders and creditors. Furthermore, it is argued that increased monitoring by institutional investors will solve the potential agency costs due to high managerial discretion (Gilson and Kraakman 1991, Black 1990).

In contrast, others such as Roe (1996) believe in the status quo given the resilience of legal and institutional elements of the corporate governance systems. Bebchuk (1998), for instance, argues that concentrated ownership – and hence uncontestable corporate

control – prevails in continental Europe because the lax corporate-governance regulation allows large shareholders to reap substantial private benefits of control. As long as continental European regulation does not change, large-shareholder concentration will resist change.

This paper will not attempt to make any statements about the superiority of one corporate governance system over another[1], but asks (i) why the German and UK corporate landscapes are so different in terms of the number of quoted companies, (ii) how ownership evolves after initial public offerings in both countries and (iii) whether the state of ownership and control concentration in the years following the IPO is predictable from corporate characteristics such as risk, profitability, growth, size, the founding family's involvement and the issuance of non-voting rights.

A possible answer to the first question may be that the listing requirements between Germany and the UK differ. However, Goergen (1998) shows that stock exchange admission requirements are very similar in Germany and the UK, and cannot possibly be responsible for the difference in the number of IPOs in the two countries. The requirements are very similar in terms of minimum size, minimum ownership dispersion and trading history. Conversely, the answer to the same question may be the existence of differences in inheritance tax: succession problems are one important reason to initiate initial public offerings. High inheritance taxes may encourage owners to increase the liquidity of their wealth locked up in a corporation by seeking a stock exchange listing (Hay and Morris 1984). Higher inheritance tax in the UK than in Germany could partially explain the higher proportion of corporate listings in the UK. However, during the 1980s and 1990s the levels of inheritance tax in Germany have exceeded those in the UK (Goergen 1998). A possible answer is based on the historical evolution of systems and is called 'the path dependence theory' (Bebchuk and Roe 1998): differences in the evolution of corporate legislation, regulation and structures have led to the current discrepancies between governance systems. Current ownership structures depend on the structures with which the economy started (structure-driven path dependence) and on the financial and corporate regulation (rule-driven path

dependence) which in turn is influenced by the initial corporate structure. Both structure-driven and rule-driven mechanisms tend to lead to persistence in ownership and control structures for reasons of efficiency because initial ownership patterns influence which type of corporate regulation would be efficient. Another reason for persistence is rent-seeking by specific classes of agents who would impede changes even if the change would be efficient.

This theory presents a plausible view of the persistence of corporate structures, but does not explain the microeconomic process of the change from concentrated control at the time of the IPO towards majority control in Germany and towards diffuse control in the UK, respectively. The remainder of the paper will deal with this issue and is structured as follows: in section 2, we provide some stylized facts about the ownership evolution in German and UK IPOs. Section 3 describes the data sources and methodology. Section 4 focuses on the control structure of IPOs which were targets of full or partial take-overs. Section 5 discusses the results from the binominal and multinominal models that attempt to predict the state of control towards which IPOs evolve six years after going public. Section 6 concludes.

2. The determinants of control concentration.

This section investigates the determinants of control (and ownership) concentration. In order to use a common basis for study of the evolution of control and ownership in the two countries, size- and industry-matched samples of recent IPOs are constructed. A first determinant is firm size as Demsetz and Lehn (1985) argue that wealth limitations restrict the existence of substantial share stakes in large corporations. Therefore, we expect that the larger the firm, the higher the probability that the firm will become widely held. This, in turn, may increase the probability of a take-over.

If the founder or his heirs are still involved in the company in terms of managerial responsibility and voting rights at the flotation, there is a high probability that they will

[1] For a comparative evaluation see Bratton and McCahery (1999). Empirical differences between the market-oriented system and the blockholder system have been documented in a.o. Roe (1994), Moerland (1995), Shleifer and Vishny (1997), Renneboog (1998a and 1999) and Barca and Becht (1999).

still be among the major shareholders six years after the IPO. Founder commitment at the time of the IPO is included in the model as a proxy for the private benefits he or she extracts from controlling the firm. Likewise, Morck et al (1988) argue that the founder of a firm may provide essential leadership skills, especially in younger firms.

The models by Zingales (1995) and Mello and Parsons (1996) show that the founders/initial shareholders should take a firm public in two discrete steps to maximize the proceeds. In a first step, they should sell cash flow rights to a large number of investors in order to retain control.[2] In a second step, the original owner should sell control to a new controlling shareholder. Hence, they predict that the presence of the founder should not negatively influence the probability of a full or partial take-over.

Bolton and von Thadden (1998) model the evolution to the optimal level of control and ownership concentration and find that high-risk firms will end up being widely held. Their proposition has been supported by several empirical studies: e.g. Demsetz and Lehn (1985) for the US, and Leech and Leahy (1991) for the UK revealed a negative relationship between ownership concentration and the degree of risk of a firm. Therefore, we propose that stable returns facilitate control retention by individual investors or families and that the probability that the firm's original owners will diversify their shareholding increases with the volatility of returns. Rapidly growing firms may have to resort to attracting more outside equity than firms operating in mature industries. Thus, the higher the growth rate, the higher will be the probability that the firm will either be taken over or become widely held (Crespi 1998).

By selling non-voting shares to the general public, the initial owners can diversify their cash flow rights in the firm, without giving up control. Although non-voting shares are in principal admitted by the London Stock Exchange, issues of non-voting shares have been actively discouraged by the authorities (Brennan and Franks 1997). Goergen and Renneboog (1999) report that the few listed UK companies that had issued non-voting shares converted them into voting shares under the pressure of the London Stock Exchange and institutional investors during the early 1990s. In Germany, in contrast,

non-voting shares are frequently issued with the IPO. In line with DeAngelo and DeAngelo (1985) for the US, we find that in German IPOs, the voting shares are normally held by the initial owners whereas the non-voting shares are issued in the IPO. Goergen (1998) investigates ownership of all the German firms going public in the 1980s. He finds that generally only IPOs floated by families issue non-voting shares. Immediately after the IPO, the family shareholder owns on average 57 per cent of the voting rights, but only 47 per cent of the total equity (voting plus non-voting shares). For other categories of shareholder there is no violation of the one vote-one share rule.

Profitable firms generating sufficient cash flows allow the initial shareholders to retain control over a longer time than poorly performing firms. Poor performance may reflect not only weak management but also poor corporate monitoring, which may activate the market for corporate control. In the UK, this market for corporate control consists in full take-overs, whereas in Germany it seems to operate via partial take-overs or a change in the major shareholder. We expect poor performance to lead to changes in control.

The use of performance as an explanatory variable raises the question of the direction of causality between ownership and profit. Goergen (1998) surveys the literature on the ownership-performance relationship: the early literature (see e.g. Morck et al 1988, Wruck 1989 and McConnell and Servaes 1990) suggests that financial performance is influenced by ownership. However, these early studies do not agree on the form of the relationship and assume that performance is exogenous and does therefore not in turn condition ownership. The studies also find a weak relationship between the two variables. Recent studies do not make this strong assumption and allow ownership to be endogenous. The majority of these latter studies (see e.g. Kole 1996, Agrawal and Knoeber 1996, Denis and Denis 1994, and Himmelberg et al 1999) do not find that ownership conditions financial performance.

[2] Brennan and Franks (1997) show that control retention is an important reason for underpricing: share rationing schemes enable original shareholders to dissipate shares over atomistic subscribers.

3. Data sources, variable description and methodology.

3.1 Sample description and data sources.

From 1981 to 1988, a total of 96 German firms went public, 51 of which were listed on the Official Market and 45 chose a listing on the Regulated Market (the second-tier market). Eighty-three per cent (80 companies) were closely held by individuals just prior to the IPO. Control and ownership concentration of 61 of these 80 German firms could be traced reliably over time.[3] During the same period, the number of UK firms going public was substantially higher with 764 firms, of which 284 were floated on the Official Market and 480 on the Unlisted Securities Market (USM), i.e. the second-tier market. This study concentrates only on domestic IPOs listed on the official and secondary markets, as data for lower market tiers[4] are normally not available. Furthermore, in order to increase direct comparability, only those German and UK IPOs in which the largest shareholder (in terms of voting equity prior to the IPO) is an individual or a group of persons (e.g. a family or unrelated associates) are selected.

There are marked differences between the sample of German and UK IPOs in terms of age, corporate size, industry and riskiness. On average, the German firms were founded 51 years prior to the flotation whereas UK firms were set up only 14 years before the initial public offering. Firm size is measured by market capitalization in pounds, adjusted for UK inflation by the annual GDP deflator (base year 1985) provided by the International Monetary Fund (IMF).[5] Moreover, the German companies were only twice as large - with a market capitalization of £113 million at the closing of the first day of listing - as the UK IPOs, which had a market capitalization of £56 million.

[3] For most of the other IPOs, the identity of the shareholders was available, but not the exact size of their holdings.

[4] Lower tier markets are the Unregulated Unofficial Market and the OTC for Germany and the Third Market and OTC for the UK.

[5] Several German firms in our sample have dual class shares of which one class is not listed. The market capitalisation for these firms was computed by multiplying the total number of shares by the market price of the listed class of shares.

The distribution of German and UK IPOs across industries also reveals significant differences.[6] Although the industry with the highest proportion of IPOs is the same for both countries (electricals, electronics and office equipment), there are proportionally more German IPOs in mature industries (such as mechanical engineering with 15.5 per cent of the total number of IPOs and motor components with 5.2 per cent). UK IPOs are better represented in cyclical service industries with 29 per cent of the sample: service agencies with 9.0 per cent, property with 6.0 per cent, leisure with 5.7 per cent, chain stores with 3.6 per cent and construction with 4.9 per cent. Within each industry, UK IPOs are also usually smaller than German IPOs.

Information on the identity of initial shareholders and on pre- and post-IPO holdings was obtained from the IPO prospectuses. For the years subsequent to the IPO substantial share stakes were traced in annual reports as well as in the London Stock Exchange Yearbooks for the UK and in the *Saling Aktienführer* for Germany. Both the direct and the ultimate equity (and control) stakes were collected[7]. To identify the ultimate shareholder and his control stake, the ownership pyramids were reconstructed. The ultimate level of control was reached when the ultimate shareholder is either an individual or a family, or a widely held company or (financial) institution[8].

Share prices were collected from the *Karlsruher Kapitalmarktdatenbank (KKMDB)* and the London Share Price Database (LSPD). IPO characteristics (age and industry) and the closing market capitalization for the first day of listing were obtained from the Deutsche Börse AG and the London Stock Exchange. Accounting information was collected from the IPO prospectuses, company reports, the Extel Financial Company

[6] The industry classification we used is based on the two-digit UK SE Groups, the industrial classification retained by the London Stock Exchange to compile its quarterly lists of new issues. It was prepared by the Institute of Actuaries and the Faculty of Actuaries. The groups are covered by the F.T. Actuaries Investment Index Classification with the amalgamation of certain related groups. For each German firm the industry description at the time of the IPO in the *Saling Aktienführer* were recorded. Subsequently, German firms were reclassified into the two-digit UK SE Groups. We have merged specific groups which only had a small number of IPOs: e.g. groups 27 (Misc. Mechanical Engineering) and 28 (Machine and Other Tools) were merged. Groups 19 (Electricals), 35 (Electronics) and 69 (Office Equipment) were also merged since groups 35 and 69 did not exist at the beginning of the 80s and computer and software manufacturers were first assigned to group 19, then to group 69 and later only to group 35.

[7] Ultimate control is only relevant for German companies; UK regulation has kept ownership structures simple and has avoided ownership pyramids or cascades.

[8] Widely held is here defined as not having a shareholder controlling 25% of the voting rights or more.

Research and Global Vantage CD-ROMs for both countries, and from Datastream and the Extel Microfiches for the UK.

3.2 Methodology.

The German IPOs are matched by size with UK IPOs to obtain a size-matched sample consisting of 54 German firms and 54 UK firms.[9] For seven German firms, a close match, defined as a match within a ±25 per cent difference in size, could not be found. Industry-matching yields a second matched sample with 58 IPOs from each country. It was not possible to find a UK match for three German IPOs.

The two German samples have 52 firms in common. The German size-matched sample includes two companies not included in the industry-matched sample, because there were no UK IPOs in specific industries during 1981-1988. The German industry-matched sample comprises six firms not included in the size-matched sample.[10]

For the size- and industry-matched samples, the following cross-sectional multinomial model is estimated:

$U_{ij} = \boldsymbol{\beta}'\mathbf{z}_{ij} + \varepsilon_{ij}$ and

$$\Pr(Y = 0) = \frac{1}{1 + \sum_{k=1}^{J} e^{b_k' x_i}}$$

$$\Pr(Y = j) = \frac{e^{b_k' x_i}}{1 + \sum_{k=1}^{J} e^{b_k' x_k}}$$

for j= 1, 2, …, J.

More specifically, U_{ij} is the state of control j in company i.

[9] The average difference in size between the German IPO and its UK match is 2.7 per cent. The median is 0.5 per cent and the standard-deviation amounts to 4.7 per cent.

[10] It may be argued that another matching based on the age of firms should have been performed. However, a reasonable match (plus or minus two years of difference) could only be found for about 19 German firms. Similarly, we tried to match firms simultaneously by size and industry. However, again for more than three-quarters of the firms a satisfactory match within the 25% standard-deviation range could not be found.

$$STATE_{ij} = \alpha + \beta_1 COUNTRY_i + \beta_2 SIZE_i + \beta_3 FOUNDER_i + \beta_4 RISK_i + \beta_5 GROWTH_i$$
$$+ \beta_6 NON\text{-}VOT_i + \beta_7 PROFIT_i + \beta_8 COUNTRY_i*SIZE_i + \beta_9 COUNTRY_i*FOUNDER_i$$
$$+ \beta_{10} COUNTRY_i*RISK_i + \beta_{11} COUNTRY_i*GROWTH_i + \beta_{12} COUNTRY_i*PROFIT_i$$
$$+ \text{time dummies} + \text{industry dummies} + \varepsilon_{ij}$$

We distinguish between four states of control 6 years after the flotation: firm i is (i) controlled by the original owners (SC), (ii) widely held (WH), (iii) taken over by a closely held bidder (TC) who is ultimately controlled by an individual or family or (iv) taken over by a widely held bidder (TW). Six years after the flotation, two thirds of the German size-matched sample were still controlled by the initial owner. This proportion is three times higher than for the UK sample (see figure 1). However, the number of take-overs is similar: 19 and 22 German and UK firms respectively.

[INSERT FIGURE 1 ABOUT HERE]

As both German and UK IPOs are included in the model, a dummy variable COUNTRY is used, which equals 1 for a German company and 0 otherwise. The coefficient on this dummy registers a possible difference in the intercept between German and UK IPOs. Firm size (SIZE) is the natural logarithm of the market capitalization of the firm at the closing price on the first day of trading and converted into 1985 pounds sterling.

Founder involvement is captured by the dummy variable FOUNDER, which equals 1 if the founder or his heirs hold an equity stake in the firm immediately prior to the IPO, and equals zero otherwise. If the founder or his heirs still hold equity in their firm immediately before the flotation, there is a high probability that they will still be among the shareholders six years after the IPO.

The level of a firm's riskiness (RISK) is measured by the standard deviation of the monthly stock returns over a five-year period subsequent to the IPO. The growth rate is also included in the model as a high growth rate may force the firm to seek external capital. The growth rate (GROWTH) is defined as the average annual growth rate of total assets over the first five years after the flotation.

By selling non-voting shares to the public, the initial owners can diversify their cash flow rights in the firm, without giving up control, which is common for German IPOs but not for UK IPOs. Twenty-three and 25 German firms issued non-voting shares in the size- and industry-matched samples, respectively. Non-voting shares (NON-VOTING) is a dummy variable capturing the issue of non-voting shares at the time of going public (dummy equals 1).

Highly profitable firms should allow their initial owners to keep control for a longer time period than firms with low revenues. Hence, a profit rate (PROFIT) was included, defined as the annual cash flow standardized by the book value of total assets. The annual cash flow is measured as the profit gross of depreciation, interest, taxes and changes in tax, pension and special provisions. For firms that changed their control state during the year of the IPO (year 0), the profit rate was not included in the model, as for these firms the profit rate measures the profitability after the change (ex-post measure) rather than prior to the change.[11]

In order to determine whether there is a country-specific effect for the variables described above, an interactive term consisting of the product of each of the above variables with the COUNTRY dummy (equaling 1 for German firms) was included in the model. The interactive terms pick up the differential effect (i.e. they are the differential slope coefficients) for the German firms .

We also estimate a binomial logit regression with only two states of control (Figure 1): (i) the firm is concentrated in the hands of the original owner or a new owner (C) and (ii) the firm is widely held, i.e. does not have a large shareholder at the direct ownership level (ownership tier 1) or the large shareholder at tier one is ultimately widely held (WH). This means that this model only distinguishes between two possible states of ownership and control concentration (high concentration versus diffuse

[11] The annual cash flow is measured as the profit gross of depreciation, interest, taxes and changes in tax, pension and special provisions. For firms that changed their control state during the year of the IPO (year 0), the profit rate was not included in the model, as for these firms the profit rate measures the profitability after the change (ex-post measure) rather than before the change. This is equivalent to multiplying the profit variable by a dummy variable, which is zero if the firm changed its state during the year of the IPO and one otherwise.

ownership) without discerning how this state was reached. For example, in the case of strong control, no distinction is make between strong control by the initial shareholders or by a new controlling shareholder. In other words, we use the binomial model to predict ownership states independent of the path along which the control state was reached in the first 5 years subsequent to the IPO.

4. Control evolution subsequent to the flotation: stylized facts.

4.1 Initial-shareholder control dilution.

In the UK, companies listed on the London Stock Exchange (LSE) tend to issue voting shares only. This is the result of the LSE's policy to discourage dual class shares (Brennan and Franks 1997). Hence, ownership and control can be used interchangeably in the UK. In contrast, non-voting shares are common for German corporations and about 38 per cent of all the German IPOs in 1981-88 issued non-voting shares. Throughout the paper, we focus on control (and hence on voting shares only) to distinguish between the four states of control of listed companies.

Table 1 records the voting power held by the initial shareholders over the six-year period after the IPO for the sample matched by size. Initial shareholder control is diluted much more rapidly in the UK than in Germany. The original shareholders of British IPOs lose majority control on average already 2 years subsequent to the flotation whereas their German counterparts retain majority control up to five years after the flotation. Although control dilution of the original shareholders is slower in German IPOs, as much as 55 per cent of the company's voting equity has changed hands at the end of the six-year period. The differences in means of initial shareholder concentration in German and UK IPOs are statistically significant at the 1% for each of the 6 years following the flotation.

[INSERT TABLE 1 ABOUT HERE]

4.2 Direct control concentration six years after going public.

Panel A of Table 2 reports direct control concentration at the end of the six-year period subsequent to flotation. We distinguish between four different types of share concentration: (a) 100 per cent control concentration following a take-over with subsequent delisting; (b) a change of the major shareholder (the major shareholder being the largest shareholder holding at least 25 per cent of the voting equity); (c) diffuse control (no single shareholder owns more than 25 per cent of the voting rights); and (d) initial shareholder control.[12]

Panel A shows that full take-overs are uncommon in Germany with only one case in our sample.[13] In contrast, in the UK 35 per cent of our sample companies were acquired in a full take-over within 6 years after the flotation and hence delisted. The German market for corporate control depends largely on changes of control, which are in fact partial take-overs.[14] Such partial take-overs are infrequent in the UK because of the legal requirement to make a tender offer for the entire equity of the firm as soon as an investor acquires more than 30 per cent of a firm's equity.[15] Thus, a shareholder in a UK company will end up with 100 per cent control or will deliberately remain underneath the 30 per cent threshold (Goergen and Renneboog 2000).

In terms of control, partial take-overs in Germany and full take-overs in the UK are similar (Goergen 1998).[16] Hence, by grouping partial and full take-overs, we find 21 and 22 'control changes' respectively in the German and UK companies of the industry matched sample over the six-year period after flotation (Table 2). This means that a similar percentage of German and UK IPOs (36% and 38%) are subject to control changes. However, the distribution of control concentration across the remaining German and UK firms is still substantially different, as 64 per cent of the German firms

[12] Whereas Table 2 considers only direct holdings, Table 4 takes both direct and indirect shareholdings into account to develop the corporate control picture.

[13] Franks and Mayer (1998) report that hostile take-overs have been a rare phenomenon in Germany. Since WWII there have only been three attempts.

[14] We therefore define a partial take-over as a control change involving at least 25 per cent of the equity, but less than 100 per cent. The threshold of 25 per cent was chosen as 25 per cent gives an investor a veto right at the AGM.

[15] The Take-over Panel may grant an exception to this rule, which makes a tender offer mandatory to a party which reaches the 30% threshold of equity (or voting rights), in the case where a shareholder takes a large stake in a financially distressed company.

remain in the hands of the initial owners whereas this is the case for only 24 per cent of the UK firms. Only one German company does not have a shareholder with a share stake of at least 25 per cent, whereas 17 UK firms are widely held.

[INSERT TABLE 2 ABOUT HERE].

Panel B of Table 2 shows that control changes in recent UK IPOs take place 3-4 years after the flotation whereas in German IPOs they happen after 4-6 years.

Not only does control concentration in Germany and the UK differ, but there are also discrepancies in the nature of ownership. Table 3 shows the identity of the major shareholder at the first tier (or direct shareholder level) six years after the flotation in the size-matched sample.[17] An individual or a family is the largest shareholder class in 28 per cent of the UK IPOs, whereas this class of shareholders controls two thirds of the German IPOs. In about one third of both the German and UK IPOs, the major shareholder (at the first tier) is another domestic or foreign company, with the foreign firms being better represented in Germany.

[INSERT TABLE 3 ABOUT HERE]

4.3 Ultimate control.

Table 2 reported that 35 per cent of the German IPOs and 44 per cent of the UK IPOs were subject to a partial or full take-over. Although, in a full take-over, the entire equity is acquired and the acquired company is delisted, an acquisition does not necessarily imply transition to complete concentration. For example, if a UK company is taken over by a widely held company, it is the management of the bidder that acquires control rather than a large shareholder. Similarly, a change in the controlling shareholder of a German company may also lead to control dilution if the new controlling shareholder is a widely held company. Table 4 focuses on the two types of take-overs (full and partial ones) and investigates whether or not the bidder's control structure is (ultimately) dispersed. The control structure of the bidder or the new controlling shareholder is therefore analyzed through different ownership tiers. The

[16] Furthermore, Goergen finds that corporate performance in Germany and the UK before partial take-overs and complete acquisitions is similar.
[17] The results for the industry-matched sample are similar and are available upon request.

largest shareholders on consecutive levels in the control cascade – control cascades are rare in the UK but common in Germany (Becht and Boehmer 1999) – were identified if these shareholders held control and formed an uninterrupted control chain.[18]

In 52 per cent of the German take-over targets in the size-matched sample, an individual or family was the ultimate shareholder. The remaining German companies were ultimately widely held, because the controlling shareholder at the top of the cascade was a company with diffuse control. Out of the 24 UK companies which were fully or partially taken over, 14 had a dispersed share structure. Taking into account the ultimate control structure is important because the potential agency problems in widely held (and hence management-controlled) firms are different from those in closely held firms (Shleifer and Vishny 1997, Bratton and McCahery 1999). Renneboog (1998b) found that, for companies quoted on the Brussels stock exchange, it is the ultimate shareholder at the top of the cascade who takes managerial disciplining decisions.

Therefore, the full and partial take-overs are subdivided into control changes (take-overs) with ultimately dispersed voting rights and those with concentrated voting rights at the ultimate shareholder level. This brings the number of distinct states of control to four: a recent IPO (i) evolves gradually towards diffuse control, (ii) becomes widely held via a full or partial take-over, (iii) undergoes a control change (via a full or partial take-over) resulting in substantial shareholder control or (iv) remains controlled by the initial shareholders. In the following section, we attempt to predict the state of control using firm characteristics for both countries.

[INSERT TABLE 4 ABOUT HERE]

5. Control state prediction.

In this section, multinomial and binomial logit models (see figure 1) are estimated to predict the evolution of the state of control six years subsequent to the flotation of the sample of German and UK IPOs. In both models, the degree of control is classified based (a) on direct shareholdings (first-tier control) and (b) on ultimate control. The

[18] A large shareholder controls a company on a lower ownership tier if he holds the largest stake exceeding 25% of the voting equity.

predictive power of these models with control based on direct shareholding was lower than the one based on ultimate control. This is in line with the findings by Renneboog (1998b). Statistical significance for the direct ownership models was always worse for the case of the size-matched sample, and worse or similar for the industry-matched sample. The results reported in this section are the ones obtained from using the ultimate-shareholder data from the size-matched sample.

The multinomial model allows for four different states six years after the IPO: original shareholder control (SC), diffuse control (WH), take-over by a closely held bidder (TC) or take-over by a widely held bidder (TW). As mentioned above, we do not distinguish between a full take-over (common in the UK) and a partial take-over, which comprises a change in the major shareholder (common in Germany).

The binomial logit model distinguishes between two states of control only: (i) the firm is controlled by the original shareholder or a new shareholder (C), and (ii) the firm is widely held, i.e. does not have a large shareholder at the first tier or the large shareholder at the first tier is ultimately widely held (WH). The reason for reducing the multinomial model to a binomial one is that it may well be that the degree of control is all that matters, and not the path followed to reach a specific control state. If this hypothesis is true and a firm's optimal level of control is concentrated, it should not matter whether the firm is controlled by the initial shareholder or a new shareholder (after a full or partial acquisition). Likewise, it should not matter whether dispersed control is reached through the gradual selling of share stakes by the original shareholders over time or via the selling of a large block to a widely held shareholder. This argument implies that the qualities to run and the incentives to monitor the company are similar for the management of the target (when the company has many small shareholders) and the management of the widely held bidder. If path dependence is irrelevant, the binomial model should have a higher predictive power than the multinomial model based on the four states of control.

5.1 The multinomial logit model

Table 5 exhibits the results of the model with four possible states of control for the size-matched sample. The model includes a differential intercept and interactive slope

coefficients, which pick up possible differential effects for the German IPOs. The model predicts the correct state of control for 80 percent of the firms. The Chi-squared test, a joint test that all the coefficients of the seven explanatory variables are zero, is rejected at the 0.01 per cent level of statistical significance.

We find that there is no country effect on the degree of control in the UK and Germany as the coefficient on the dummy COUNTRY is not significantly different from zero. However, country effects are also included as interaction terms and some of these differential slope coefficients are significantly different from zero (see infra).

Interestingly, firm size does not influence the odds of evolving towards a diffuse shareholding structure or towards concentrated control. However, the differential SIZE-coefficient is significant for the two types of take-overs suggesting that substantial control changes are more likely in large German companies.[19]

If the founder or his heirs are still shareholders (FOUNDER=1) at the time of the IPO, the probability that the firm will evolve towards low control concentration over the six years subsequent to the IPO decreases. However, founder involvement at the flotation does not seem to influence the probability of being taken over, which is in line with the predictions of the models of Zingales (1995) and Mello and Parsons (1996). The result is also consistent with the findings of Chung and Pruitt (1996) who conclude that control concentration is positively correlated with the presence of the founder for a sample of US firms.

We hypothesized that companies with a high risk-profile (measured by the volatility of returns) evolve towards a state of dispersed ownership of voting shares for reasons of risk sharing. However, table 5 reveals that high volatility significantly increases the probability of a take-over by an individual/family or by a company which is in turn controlled by a large shareholder. Likewise, the negatives signs hint (although without statistical significance) that high risk does not lead to dispersed corporate control. There is evidence that high risk decreases the odds for German IPOs to be taken over

[19] Initially, a variable, which measures the age of the firm at the time of the IPO was also included in the model. In order to avoid multicollinearity with other variables, age was finally excluded from the model.

by a bidder that is ultimately widely held. This is different from the predictions from what Bolton and von Thadden's (1998) model predicts.

High growth rates of total assets (GROWTH) could lead to control dilution due to the limited availability of internally generated funds to finance growth opportunities and due to the implied need to attract external capital.[20] Therefore, control evolution towards a widely held firm is more likely to happen. Table 5 confirms this hypothesis: both diffuse ownership or a take-over by a widely held company are more likely for growth companies than a substantial degree of control in the hands of the original owners. Fast growing German IPOs face also higher odds of a partial take-over by a closely held bidder relative to the probability of remaining controlled by the pre-IPO shareholders.

Non-voting shares are shown to be an impediment to take-overs. They allow owners to keep control and simultaneously to diversify their cash flow rights.

Table 5 supports the proposition by Burkart et al. (1997) which claims that different states of the world require specific control structures. In some states of the world (such as the one with low profitability), a large stable shareholder with a long-term perspective is needed, while in other cases a dispersed share structure allows sufficient discretion for management. We find indeed that a low profit rate augments the probability of a recent IPO being acquired by a concentrated bidder. Incumbent shareholders may sell out to a concentrated bidder, if they are not able to provide the right monitoring to improve their firm's performance, since poor performance is not only the result of poor managerial performance, but also of a breakdown of corporate control. Even more interesting is the fact that the higher the profit rate, the higher the odds that the firm will be taken over by a widely held bidder. The fact that widely held companies prefer profitable take-over targets can be explained in an agency-cost setting: managers of widely held firms may find it easier to boost financial performance by taking over profitable corporations rather than to improve the financial results of

[20] All results in this section – apart from the conclusions concerning corporate growth – are also valid for the industry-matched sample. These results are not reported in the paper, but are available upon request. The only difference in results is that the GROWTH coefficient is not significantly different from zero at the ten per cent level for the industry sample. This is probably due to the fact that firms matched by industry have more comparable growth rates than those matched by size (see also Goergen 1999).

their current business.[21] Alternatively, widely held bidders may not be able to provide the level of monitoring, which would be required to turn around a badly performing target firm. Finally, the differential slope coefficient is positive and significantly different from zero, suggesting that this effect is even more pronounced for the German IPOs.

From the multinomial model we can conclude that – taking the case of control held by initial shareholders as the benchmark – there are substantial differences between take-overs with concentrated (ultimate) control and acquisitions by widely held companies. The probability of a control change with concentrated ultimate control increases when the IPO is risky and poorly performing. Furthermore, in the case of German IPOs, the odds of being taken over by a closely held bidder increase if the company is large, has not issued any non-voting shares and has a high growth rate. The probability of an acquisition by a bidder with a diffuse share structure, increases for profitable IPOs, and even more so for German IPOs which are large, not risky and did not issue non-voting equity. Founder involvement at the time of going public augments the probability that the firm remains controlled by the initial owners.

5.2 The binomial logit model.

A model with only two control states (concentrated versus dispersed control) may yield stronger predictions than the four-stage model described above. Indeed, it is possible that only the degree of control matters and not how this 'optimal' control state is reached. It is assumed that an IPO reaches an equilibrium state of control six years after the flotation or earlier. This is a fair assumption as Table 2 shows that most changes in control take place before the 6th year following the IPO. If a firm's optimal control structure is concentrated, it should either stay concentrated with the initial shareholder or its control should be directly transferred to a new shareholder. Alternatively, if the optimal state of control is dispersed, the voting shares should be held by a large number of small investors or a company with dispersed shareholders.

The results from the binomial logit model are in Table 6, which shows that the predictive power of the two-state model is marginally better than the one of the four-

[21] This finding is confirmed by a study on hostile take-overs in the UK by Franks and Mayer (1996).

state model. The binomial model predicts the correct state for 83 per cent of the IPO firms. Although this is an improvement in terms of predictive power and suggests that the path along which the equilibrium state of control for recent IPOs does not matter, some information has been lost in the aggregation process. The binomial logit model corroborates the results of the multi-state model. The probability that control becomes dispersed in recent IPOs increases for larger, profitable, high growth companies, and with no founder ownership immediately before the flotation. In addition, German IPOs tend towards more diffuse control in the case of low risk, when the company has no non-voting equity and when the founder held a stake in the firm at the time of going public.

6. Conclusion

Whereas some propose the superiority of the market oriented system and claim to find evidence that the blockholder system is gradually evolving towards the more efficient market-oriented system, others state that the evolution towards the current discrepancies in terms or ownership and control is the result of a path-dependent process based on different legislations and regulations that were introduced over the past century. As long as the lax corporate governance systems will exist, blockholders will be able to compensate the disadvantages of the lack of liquidity of their investment by reaping private benefits of control. The paper gives a partial answer to the question why the corporate landscapes in terms of control are so different in Germany and the UK by investigating ownership and control evolution in recent IPOs.

The paper details the control evolution of a sample of size- and industry-matched German and UK companies six years subsequent to the flotation. The initial shareholders in the average German company loses absolute majority control only six years subsequent to going public, whereas initial owners in UK companies decrease their holding to less than 50% of the voting equity already two years after going public. Acquisitions are frequent in the UK with 35% being taken over versus only one German sample company. Partial take-overs are common in German firms: in one third of the sample a large controlling shareholder acquires control from another controlling shareholder. Contrary to the UK where 31% of IPOs become widely held, the initial

shareholders retain absolute control in a majority (63%) of German IPOs even 6 years after the flotation.

The nature of the controlling shareholder differs between the average German and UK firm: the largest shareholder class, dominating two thirds of the German companies with concentrated ownership are families, whereas (domestic) companies control almost 30% of the UK firms with concentrated ownership which went public 6 years prior.

We also analyzed changes in control based on ultimate ownership structures and distinguished between two types of take-overs: acquisitions by a (ultimately) widely held company and acquisitions by individuals or families. In the UK, the acquisition of a controlling block of 30% of the voting equity results in the obligation to tender for all other shares; a requirement which does not exist in Germany. Consequently, we argue that if we regard the full take-overs in the UK as similar – in terms of control - to changes in control due to the selling of a controlling block to a new large shareholder (a partial take-over) in Germany, the overall picture of corporate ownership and control is less diverging than usually ascertained.

In order to predict the state of ownership and control six years subsequent to going public, a multinomial logit model is used. We distinguish between four possible states of control: the company is (i) still controlled by the shareholders who controlled the company prior to the flotation, (ii) acquired by a closely held shareholders (i.e. an individual or family), (iii) acquired by a shareholder with diffuse control and (iv) widely held. The model has a high predictive power with about 80 per cent of correct predictions. We find that if the founder still has a stake in the firm at the flotation, the probability that the company will still be controlled by this founder after six years is larger. When German and UK IPOs are risky and poorly performing, their odds of ending up with concentrated ultimate control increased. Specifically for German IPOs, the probability of evolving towards or retaining substantial control concentration augments when non-voting shares are issued at flotation and when the company experiences a high growth rate subsequent to the IPO. Profitable, non-risky, large companies tend to be widely held six years after being listed.

The binomial model is used to predict just two states of control concentration: diffuse versus strong control. Hence, no distinction is made between diffuse control achieved by the gradual selling of large share stakes and diffuse control achieved by being acquired by a widely held shareholder. Likewise, a high degree of control is the result of control retention by initial shareholders or of the acquisition by a shareholder owned by a controlling ultimate shareholder. The model gives better (albeit only marginally better) predictive power, hinting that in terms of the prediction of the control state, the path along which the control state is reached (e.g. by acquisition) is not important.

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Table 1: Proportion of voting rights held by original shareholders in recent German and UK IPOs.

The German IPOs are matched by size with UK IPOs.

(1) If a company is taken over and is delisted, we classify this as a case of 100% control by new shareholders as of the year of the takeover. If a company is taken private by its original shareholders, it will be recorded as a company owned 100 per cent by its original shareholders. (2) The differences in means for each year are significantly different from zero at the 1% level.

	German firms		UK firms	
Time after IPO	**Proportion held**	**Sample size**	**Proportion held**	**Sample size**
Immediately after the IPO	76.4%	54	62.6%	54
1 year	73.6%	54	51.3%	54
2 years	69.1%	54	47.0%	54
3 years	63.8%	54	38.7%	52
4 years	59.0%	54	30.3%	52
5 years	51.2%	54	25.5%	52
6 years	45.3%	54	24.2%	48

– Sources: IPO prospectuses, Saling, company reports, London Stock Exchange and Extel.

Table 2: State of control of recent IPOs six years after flotation (for the size-matched sample) at the first ownership tier.

*(1) The disclosed state, is the one six years after the IPO or the one of the last year of listing, if the firm was delisted before the sixth year after the flotation. (2) A full take-over is a take-over of the entire equity of th*e firm, followed by the delisting of the firm. (3) A control change is a a change of the major shareholder, the major shareholder being the largest shareholder holding at least 25 per cent of the voting equity. (4) A firm is widely held, if no single shareholder owns more than 25 per cent of the voting rights. (5) A firm is still controlled by an initial shareholder, if the initial shareholder is the largest shareholder and holds more than 25% of the votes.

Panel A: Number of firms by state of control.

	Size sample		Industry sample	
	Germany	UK	Germany	UK
Full take-over	1	19	1	18
Control change	18	5	20	4
Widely held (<25%)	1	17	1	16
Still controlled by initial shareholders	34	13	36	20
Total	54	54	58	58

Panel B: Average number of years before reaching the new state of control.

	Size sample		Industry sample	
	Germany	UK	Germany	UK
Full take-over	6.0	3.7	6.0	3.5
Control change	4.4	3.0	4.3	3.5
Widely held (25% def.)	---	1.8	---	1.7

Sources: McCarthy microfiches, Saling Aktienführer, Financial Times, company reports.

Table 3: Voting rights in excess of 25% held by the major shareholder in German and UK firms matched by size six years after the flotation

The table is based on a sample of German and UK IPOs matched by market capitalisation. The sample is unbalanced i.e. if a firm is delisted prior to its sixth year after going public, the largest shareholder as in the last year prior to the delisting is reported.

	Germany	UK
A. Companies without a large shareholder	1.85%	33.33%
B. Companies with a large shareholder	98.15%	66.67%
1. another domestic company	7.41%	29.63%
2. a foreign company	22.22%	5.56%
3. an insurance company	1.85%	0.00%
4. a trust / an institutional investor	0.00%	3.70%
5. a family group	66.67%	27.78%
6. a bank	0.00%	0.00%
Total	100.00%	100.00%

Source: Company reports, Saling for Germany and London Stock Exchange and Extel for the UK.

Table 4: Ultimate shareholder in targets of full and partial take-overs.

A firm is classed as widely held, if its ultimate largest shareholder is widely held, i.e. is not controlled by a person or family holding more than 25% of the votes. A firm is classed as closely held, if the ultimate largest shareholder, is a person or a family.

Panel A: Size-matched sample.

	Targets full take-over		Control change (excluding take-over)		All full take-overs and control changes	
	Germany	UK	Germany	UK	Germany	UK
Widely held	1	14	8	-	9	14
Closely held	-	5	10	5	10	9

Panel B: Industry-matched sample.

	Targets full take-over		Control change (excluding take-over)		All full take-overs and control changes	
	Germany	UK	Germany	UK	Germany	UK
Widely held	-	13	10	-	10	13
Closely held	-	5	10	3	10	8

Sources: McCarthy microfiches, Saling Aktienführer, Financial Times, company reports.

Table 5: Prediction of degree of control for size-matched sample of German and UK recent IPOs using a multinomial logit model with 4 possible states of control.

(1) P_{SC} is the probability of being still controlled by the original owner, P_{WH} is the probability of being widely held, P_{TC} is the probability of being taken over by a closely held firm and P_{TW} is the probability of being taken over by a widely held firm. (2) The p-values are in parentheses and results statistically significant within the 10% level are in bold. (3) Each model contains time dummies and industry dummies.

	Log (P_{WH}/P_{SC})	Log (P_{TC}/P_{SC})	Log (P_{TW}/P_{SC})
Constant	0.294 (0.950)	-34.007 (1.000)	-92.916 (1.000)
Country	-33.940 (1.000)	31.427 (1.000)	17.605 (1.000)
Size	0.848 (0.423)	-2.479 (0.162)	0.984 (0.400)
Size * Country	1.434 (1.000)	**3.988** **(0.078)**	**4.859** **(0.048)**
Founder	**-8.018** **(0.082)**	34.442 (1.000)	26.777 (1.000)
Founder * Country	2.736 (1.000)	-36.937 (1.000)	-15.785 (1.000)
Risk	-7.583 (0.696)	**79.780** **(0.061)**	-36.246 (0.268)
Risk * Country	-73.887 (1.000)	-118.425 (0.108)	**-310.422** **(0.021)**
Growth	**14.008** **(0.064)**	-1.667 (0.754)	**25.202** **(0.012)**
Growth * Country	-9.901 (1.000)	**21.674** **(0.040)**	-24.990 (0.130)
Non-voting	-4.220 (1.000)	**-3.062** **(0.091)**	**-17.350** **(0.012)**
Profit rate	-8.873 (0.422)	**-42.280** **(0.065)**	**30.240** **(0.032)**
Profit rate * Country	10.258 (1.000)	32.133 (0.125)	**74.057** **(0.059)**
Chi-squared (d.f., p-value)	138 (63, 0.000)		
Percentage of correct predictions	79.76		
Observations	84		

Table 6: Prediction of degree of control for size-matched sample of German and UK recent IPOs using a binomial logit model.

(1) P_C is the probability of being closely held, P_{WH} is the probability of being widely held. (2) The p-values are in parentheses and results statistically significant within the 10% level are in bold (3) The naïve model consists in predicting that each firm will have the state, which has the highest actual frequency in the sample. (4) The model contains time dummies and industry dummies.

	Log (P_{WH}/P_C)
Constant	-1.075 (0.716)
Country	-3.443 (0.546)
Size	**1.387** **(0.045)**
Size * Country	1.232 (0.305)
Founder	**-8.906** **(0.004)**
Founder * Country	**10.734** **(0.012)**
Risk	-14.176 (0.241)
Risk * Country	**-129.233** **(0.042)**
Growth	**9.608** **(0.022)**
Growth * Country	-12.315 (0.205)
Non-voting shares	**-5.215** **(0.011)**
Account profit rate	**14.117** **(0.052)**
Account profit rate * Country	-4.863 (0.689)
Chi-squared (d.f., p-value)	53 (21, 0.001)
Percentage of correct predictions	83.33
Percentage of correct predictions using naïve model	60.71
Observations	84

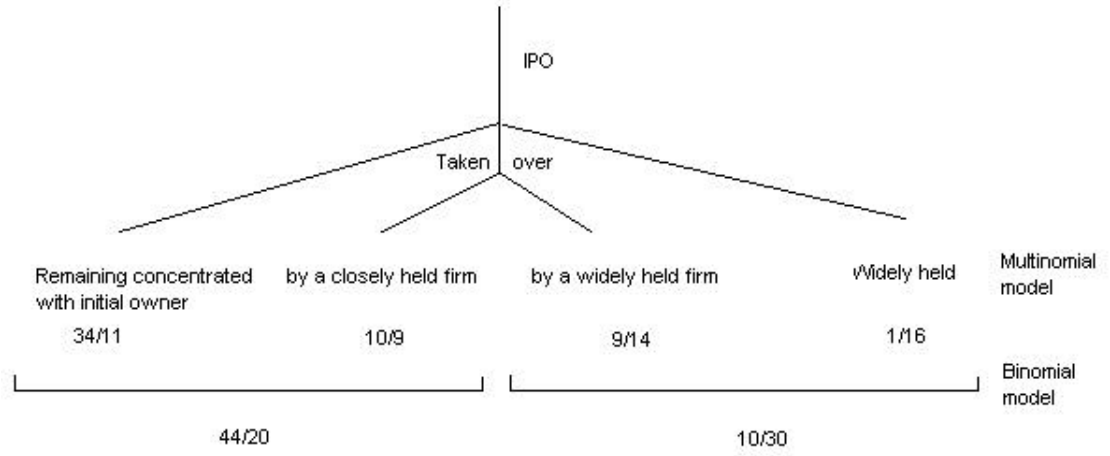

Figure 1: Ultimate shareholder 6 years after the IPO for the size-matched sample.

Notes : The numbers underneath the states of control show, respectively, the number of German (at the left) and of UK (at the right) companies. The closely held firm which acquires an IPO is controlled by an individual or a family. If a take-over takes place where the bidder is closely held by another company which widely held, this take-over is classified as a take-over by a widely held firm. The two UK firms that went private and the two UK firms that went bankrupt are excluded from the above figure.